

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in this application. Added text is indicated by underlining, and deleted text is indicated by ~~strikethrough~~. Changes are identified by a vertical bar in the margin.

Listing of Claims:

1 1. (previously presented) A control method for a storage system which
2 comprises a plurality of information processing units, a managing computer, a storage device
3 provided with a plurality of logical volumes, and a user interface, said control method
4 comprising:
5 performing a first process in which when a data write request to a first logical
6 volume is sent from the information processing unit to the storage device the storage device
7 stores data in the first logical volume and also stores the data in a second logical volume;
8 performing a second process in which the storage device suspends the first
9 process;
10 shifting from the second process to the first process to perform the first process;
11 when shifting from the second process to the first process to perform the first
12 process, inquiring an information processing unit which can access the second logical volume, of
13 whether said information processing unit mounts the second logical volume or not;
14 deciding whether said information processing unit mounts the second logical
15 volume or not;
16 when the information processing unit mounts the second logical volume,
17 outputting that effect from said user interface before shifting to the first process;
18 accepting a change of pair condition between said first logical volume and said
19 second logical volume at the managing computer, wherein said accepted change comprises a
20 shift from said second process to said first process initiated through the user interface, wherein
21 said managing computer inquires to an information processing unit accessible to said second

logical volume as to whether or not said second logical volume is mounted available to read and write from said information processing unit;

when as a result of said inquiring by the managing computer, if the managing computer finds that said second logical volume is mounted available to read and write from said information processing unit, then outputting an indication that the second logical volume is mounted through the user interface of the managing computer without instructing the change to said pair condition to said information processing unit.

2. (previously presented) A control method for a storage system which comprises a plurality of information processing units, a managing computer, a storage device provided with a plurality of logical volumes, and a user interface, said control method comprising:

performing a process in which when a data write request to a first logical volume is sent from the information processing unit to the storage device the storage device stores data in the first logical volume and also stores the data in a second logical volume;

when the control is to be newly initiated between the first logical volume and the second logical volume, inquiring an information processing unit which can access the second logical volume, of whether said information processing unit mounts the second logical volume or not;

deciding whether the information processing unit mounts the second logical volume or not; and

when the information processing unit mounts the second logical volume, outputting that effect from said user interface without being newly initiated between the first logical volume and the second logical volume;

accepting a change of pair condition between said first logical volume and said second logical volume at the managing computer, wherein said accepted change comprises a shift from said second process to said first process initiated through the user interface, wherein said managing computer inquires to an information processing unit accessible to said second

logical volume as to whether or not said second logical volume is mounted available to read and write from said information processing unit;

when as a result of said inquiring by the managing computer, if the managing computer finds that said second logical volume is mounted available to read and write from said information processing unit, then outputting an indication that the second logical volume is mounted through the user interface of the managing computer without instructing the change to said pair condition to said information processing unit.

3. (currently amended) A control method for a storage system which comprises a plurality of information processing units, ~~a managing computer~~, a storage device provided with a plurality of logical volumes, and a managing computer, ~~and~~; said control method comprising:

performing a first process in which when a data write request to a first logical volume is sent from the information processing unit to the storage device the storage device stores data in the first logical volume and also stores the data in a second logical volume;

performing a second process in which the storage device suspends the first process;

shifting from the second process to the first process to perform the first process;

when shifting from the second process to the first process to perform the first process, inquiring an information processing unit which can access the second logical volume of whether the information processing unit mounts the second logical volume or not;

deciding whether the information processing unit mounts the second logical volume or not; and

when the information processing unit mounts the second logical volume, outputting that effect from a user interface of the managing computer before performing the first process;

accepting a change of pair condition between said first logical volume and said second logical volume at the managing computer, wherein said accepted change comprises a shift from said second process to said first process initiated through the user interface, wherein

said managing computer inquires to an information processing unit accessible to said second logical volume as to whether or not said second logical volume is mounted available to read and write from said information processing unit;

when as a result of said inquiring by the managing computer, if the managing computer finds that said second logical volume is mounted available to read and write from said information processing unit, then outputting an indication that the second logical volume is mounted through the user interface of the managing computer without instructing the change to said pair condition to said information processing unit.

4. (previously presented) A storage system control method according to claim 1, wherein when the information processing unit does not mount the second logical volume the storage device shifts from the second process to the first process to perform the first process.

5. (previously presented) A control method for a storage system which comprises a plurality of information processing units, a managing computer, a first storage device provided with a first logical volume in a first site, a second storage device provided with a second logical volume in a second site, said method comprising:

performing a first process in which when a data write request to the first logical volume is sent from the information processing unit to the first storage device the first storage device stores data in the first logical volume, the first storage device sends the data to the second storage device, and the second storage device which receives the data stores the data in the second logical volume;

performing a second process in which the second storage device suspends the first process;

the second storage device shifting from the second process to the first process to perform the first process;

when shifting from the second process to the first process to perform the first process, inquiring an information processing unit which can access the second logical volume of whether the information processing unit mounts the second logical volume or not;

17 deciding whether the information processing unit mounts the second logical
18 volume or not; and
19 when the information processing unit mounts the second logical volume,
20 outputting that effect from a user interface before shifting to the first process;
21 accepting a change of pair condition between said first logical volume and said
22 second logical volume at the managing computer, wherein said accepted change comprises a
23 shift from said second process to said first process initiated through the user interface, wherein
24 said managing computer inquires to an information processing unit accessible to said second
25 logical volume as to whether or not said second logical volume is mounted available to read and
26 write from said information processing unit;
27 when as a result of said inquiring by the managing computer, if the managing
28 computer finds that said second logical volume is mounted available to read and write from said
29 information processing unit, then outputting an indication that the second logical volume is
30 mounted through the user interface of the managing computer without instructing the change to
31 said pair condition to said information processing unit.

1 6. (previously presented) A storage system control method according to
2 claim 5, wherein when the information processing unit does not mount the second logical
3 volume the second storage device shifts from the second process to the first process to perform
4 the first process.

1 7. (previously presented) A storage system connectable to a plurality of
2 information processing units, a managing computer, a storage device provided with a plurality of
3 logical volumes, and a user interface, said storage system comprising:
4 means for performing a first process in which when a data write request to a first
5 logical volume is sent from the information processing unit to the storage device the storage
6 device stores data in the first logical volume and also stores the data in a second logical volume;
7 means for performing a second process in which the storage device suspends the
8 first process;

9 means for shifting from the second process to the first process to perform the first
10 process;

11 means for inquiring an information processing unit which can access the second
12 logical volume of whether the information processing unit mounts the second logical volume or
13 not when shifting from the second process to the first process to perform the first process;

14 means for deciding whether the information processing unit mounts the second
15 logical volume or not;

16 means for, when the information processing unit mounts the second logical
17 volume, outputting that effect from said user interface before shifting to the first process;

18 means for accepting a change of pair condition between said first logical volume
19 and said second logical volume at the managing computer, wherein said accepted change
20 comprises a shift from said second process to said first process initiated through the user
21 interface, wherein said managing computer inquires to an information processing unit accessible
22 to said second logical volume as to whether or not said second logical volume is mounted
23 available to read and write from said information processing unit;

24 means for, when as a result of said inquiring by the managing computer, if the
25 managing computer finds that said second logical volume is mounted available to read and write
26 from said information processing unit, then outputting an indication that the second logical
27 volume is mounted through the user interface of the managing computer without instructing the
28 change to said pair condition to said information processing unit.

1 8. (previously presented) A managing computer connectable to a storage
2 system which comprises a plurality of information processing units and a storage device
3 provided with a plurality of logical volumes, said managing computer comprising:

4 means for shifting from a second process to a first process to perform the first
5 process;

6 means for inquiring an information processing unit which can access a second
7 logical volume of whether the information processing unit mounts the second logical volume or
8 not when shifting from the second process to the first process to perform the first process,

wherein said first process is that the storage device stores data in a first logical volume and also stores the data in the second logical volume, wherein said second process is that the storage device suspends the first process;

means for, when the information processing unit mounts the second logical volume, outputting that effect from said user interface before shifting to the first process;

means for accepting a change of pair condition between said first logical volume and said second logical volume at the managing computer, wherein said accepted change comprises a shift from said second process to said first process initiated through the user interface, wherein said managing computer inquires to an information processing unit accessible to said second logical volume as to whether or not said second logical volume is mounted available to read and write from said information processing unit;

means for, when as a result of said inquiring by the managing computer, if the managing computer finds that said second logical volume is mounted available to read and write from said information processing unit, then outputting an indication that the second logical volume is mounted through the user interface of the managing computer without instructing the change to said pair condition to said information processing unit.

9. (canceled)

10. (previously presented) A computer-readable storage medium having a program for a managing computer in a storage system comprising a plurality of information processing units and a storage device provided with a plurality of logical volumes, said program comprising:

code for performing a first process in which when a data write request to a first logical volume is sent from the information processing unit to the storage device the storage device stores data in the first logical volume and also stores the data in a second logical volume,

code for performing a second process in which the storage device suspends the first process,

code for shifting from the second process to the first process to perform the first process,

code for inquiring an information processing unit which can access the second logical volume of whether the information processing unit mounts the second logical volume or not when shifting from the second process to the first process to perform the first process, code for deciding whether the information processing unit mounts the second logical volume or not, code for, when the information processing unit mounts the second logical volume, outputting that effect from a user interface of the managing computer before shifting to the first process, code for accepting a change of pair condition between said first logical volume and said second logical volume at the managing computer, wherein said accepted change comprises a shift from said second process to said first process initiated through the user interface, wherein said managing computer inquires to an information processing unit accessible to said second logical volume as to whether or not said second logical volume is mounted available to read and write from said information processing unit; code for, when as a result of said inquiring by the managing computer, if the managing computer finds that said second logical volume is mounted available to read and write from said information processing unit, then outputting an indication that the second logical volume is mounted through the user interface of the managing computer without instructing the change to said pair condition to said information processing unit.

11. (previously presented) A method according to claim 1, further including: continuing the change of the pair condition of shifting from said second process to said first process through the user interface, even if it is outputted to the user interface of the managing computer that said information processing unit mounted the second logical volume, and said managing computer sending a request of forced change of said pair condition to said information processing unit, said information processing unit sends the request of the forced change to said storage device in response to the forced change request, and said storage device shifts said pair condition from said second process to said first process in response to the forced change request.

1 12. (previously presented) A method according to claim 2, further including:
2 continuing the change of the pair condition of shifting from said second process to
3 said first process through the user interface, even if it is outputted to the user interface of the
4 managing computer that said information processing unit mounted the second logical volume,
5 and said managing computer sending a request of forced change of said pair condition to said
6 information processing unit, said information processing unit sends the request of the forced
7 change to said storage device in response to the forced change request, and said storage device
8 shifts said pair condition from said second process to said first process in response to the forced
9 change request.

1 13. (previously presented) A method according to claim 3, further including:
2 continuing the change of the pair condition of shifting from said second process to
3 said first process through the user interface, even if it is outputted to the user interface of the
4 managing computer that said information processing unit mounted the second logical volume,
5 and said managing computer sending a request of forced change of said pair condition to said
6 information processing unit, said information processing unit sends the request of the forced
7 change to said storage device in response to the forced change request, and said storage device
8 shifts said pair condition from said second process to said first process in response to the forced
9 change request.

1 14. (previously presented) A method according to claim 5, further including:
2 continuing the change of the pair condition of shifting from said second process to
3 said first process through the user interface, even if it is outputted to the user interface of the
4 managing computer that said information processing unit mounted the second logical volume,
5 and said managing computer sending a request of forced change of said pair condition to said
6 information processing unit, said information processing unit sends the request of the forced
7 change to said storage device in response to the forced change request, and said storage device
8 shifts said pair condition from said second process to said first process in response to the forced
9 change request.

1 15. (previously presented) A system according to claim 7, further including:
2 means for continuing the change of the pair condition of shifting from said second
3 process to said first process through the user interface, even if it is outputted to the user interface
4 of the managing computer that said information processing unit mounted the second logical
5 volume, and said managing computer sending a request of forced change of said pair condition to
6 said information processing unit, said information processing unit sends the request of the forced
7 change to said storage device in response to the forced change request, and said storage device
8 shifts said pair condition from said second process to said first process in response to the forced
9 change request.

1 16. (previously presented) A managing computer according to claim 8,
2 further including:
3 means for continuing the change of the pair condition of shifting from said second
4 process to said first process through the user interface, even if it is outputted to the user interface
5 of the managing computer that said information processing unit mounted the second logical
6 volume, and said managing computer sending a request of forced change of said pair condition to
7 said information processing unit, said information processing unit sends the request of the forced
8 change to said storage device in response to the forced change request, and said storage device
9 shifts said pair condition from said second process to said first process in response to the forced
10 change request.

1 17. (previously presented) A computer-readable storage medium according to
2 claim 10, further including:
3 code for continuing the change of the pair condition of shifting from said second
4 process to said first process through the user interface, even if it is outputted to the user interface
5 of the managing computer that said information processing unit mounted the second logical
6 volume, and said managing computer sending a request of forced change of said pair condition to
7 said information processing unit, said information processing unit sends the request of the forced
8 change to said storage device in response to the forced change request, and said storage device

- 9 shifts said pair condition from said second process to said first process in response to the forced
10 change request.